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Abstract

REVIEW OF SAFETY PRECAUTIONS DERIVED FROM SIX-YEAR EXPERIENCE OF A SPENT FUEL REPROCESSING PLANT

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In a center for the processing of irradiated fuels, as in any other factory, continuity of production can only be achieved through constant effort to maintain the standard of safety. The authors examine the safety elements inherent in the design of the installations, from the point of view of both radioactive and conventional protection.

It is clear that in the nuclear industry it is not sufficient merely to adopt the usual precautions against the risks of explosion, fire, etc...; but great attention must be paid to the problems arising from the confinement of materials, radioactivity and the risks of criticality.

The general principles of the technical prevention of radioactive risks are now well known.

They must be applied as soon as the plans are drawn up for the installations, by taking into account :

- the design and construction of the installations with respect to the risks mentioned above
- the division of the plant into zones
- the circulation of personnel and material
- ventilation and purification of the air

The technical safety factors however, are not sufficient in themselves. However good the material and the degree of automation achieved, the smooth running of a factory depends on the man responsible for supervision and repair

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work or who takes initiatives. Technical safety is never definitive and must be continually maintained. The collaboration of the workers is necessary to its efficiency. Psychological measures must thus be taken as an addition to the technical precautions. This psychological prevention is based on :

- education of the personnel
- organization of the work and definition of the safety rules
- checking on obediance to the rules and behaviour of the personnel
- constant reminders of the necessity for the prevention of radioactive risks.

Six years operation of the irradiated fuel processing plant at Marcoule have shown the importance of close collaboration between workers and technique. The authors analyse the results obtained from an organization of the work aimed at eliminating the causes of incidents. They investigate the following points in particular :

- frequency of entry into forbidden zones during normal functioning
- the distribution of exceptional tasks
- the prevention of criticality risks
- zone contamination incidents
- the volume and nature of decontaminated material and eliminated residues
- the evolution and distribution of external irradiation doses received by the workers
- the frequency of cases of body contamination
- internal contamination fixed in the organisms of workers.

Conclusions are drawn from the different incidents which have occured during the years of operating the plant.